

REMARKS

Claims 51-68, 70-76 and 79-94 are pending in this application. By this Amendment, claims 76 and 80 are amended. Claim 77 is canceled without prejudice to, or disclaimer of, the subject matter recited in that claim. Reconsideration of the rejections based on the above amendments and the following remarks is respectfully requested.

Applicants note that although the Office Action summary, at line 2a, indicates that this Action is Final, the Examiner's indication of claim rejections, on page 2 of the Office Action, indicates that this is a second non-Final Rejection. Applicants' representative contacted Examiner Chen on July 20 in an attempt to clear up this discrepancy. The Examiner returned Applicants' representative's telephone call on July 22 indicating that this Rejection is not made Final. As such, Applicants understand that this is a second non-Final Rejection and not a Final Rejection of the above-identified application.

The Office Action, in paragraphs 15 and 16, states that claims 88-94 are allowed. Applicants appreciate the allowance of these claims.

The Office Action, in paragraph 1, rejects claim 67 under 35 U.S.C. §102(b) as being anticipated by Japanese Patent No. JP 10-081964 A to Akiyama et al. (hereinafter "Akiyama"). This rejection is respectfully traversed.

Akiyama is directed to improving mechanical characteristics of a substrate such as warp or tilt after the substrate has been subjected to sputtering so that an optical recording medium small in distortion can be produced (Abstract and blocks [0009] and [0014]). Specifically, Akiyama teaches the tangent of the angle θ (or "tantheta") of the disk holder as a measure of interest (see e.g., block [0015]). Akiyama defines the angle of the periphery section of the holder as shown in Fig. 4 with the center (inner circumference section) of the holder. In addition, as appreciated from Table I of Akiyama, the tilts of the substrates manufactured in Examples of Akiyama are all less than 10 mrad.

Akiyama discloses, in Table I, disk substrates for optical disks having a thickness of 0.6 mm in which a tilt angle of 4.1 mrad or 3.5 mrad is measured with a mechanical characteristic measuring device after a day at 23°C and 50% humidity (block [0032]). Table I also discloses a comparative example where a substrate with a thickness of 0.6 mm results in a tilt angle of 8.3 mrad measured under the same conditions. Applicants respectfully submit that Table I is presented in order to show that, when an essentially flat disk is distorted according to Akiyama during the sputtering process, improvements in disk curvatures (DEF shown in Table I, or "the mechanical characteristics of an optical recording medium") are realized. In other words, by using a holder according to Akiyama to support the sputtering process, an improved disk is produced which has some angle θ . Of note is that there is no correlation between $\tan\theta$ shown in Table I, and tilt angle measured in mrad.

Specifically, Akiyama discloses that at the time of producing an optical disk, the position of the outer circumferential part is made higher than the contact position in the inner circumferential part to stably produce an optical recording medium with excellent mechanical properties, such angle of the holder section maintained desirably in a range such that $\tan\theta$ is 0.01-0.15 or more desirably 0.03-0.12 (Abstract and block [0015], emphasis added). The angle of the holder does not correlate to the angle of the finished substrate to this invention as is reflected in Table I. For example, a tangent of an angle θ of 0.0000, 0.0167 or 0.0333 would be expected to correlate to a tilt angle of approximately, 0 mrad, 1.6 mrad and 3.3 mrad respectively rather than, as shown in Table I, 8.3 mrad, 4.1 mrad and 3.5 mrad.

For at least these reasons, Applicants respectfully submit that Akiyama cannot reasonably be read to recite, or even suggest, the features recited in claim 67. Specifically, Akiyama does not disclose a disk substrate for an optical disk, the substrate having an axis of

rotation and a thickness of less than 0.8 mm, wherein a disk plane tilts at a tilt angle θ , which satisfies $10 \text{ mrad} \leq \theta \leq 20 \text{ mrad}$, with a plane perpendicular to the axis of rotation.

Accordingly, reconsideration and withdrawal of the rejection of claim 67 under 35 U.S.C. §102(b) as being anticipated by Akiyama is respectfully requested.

The Office Action, in paragraph 2, rejects claims 58, 66, 76-78, 80 and 86 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,058,094 to Suzuki. This rejection is respectfully traversed.

Suzuki discloses a magneto-optical disk recording/reproducing apparatus which includes a magneto-optical disk provided with a disk hub formed of a magnetizable metal plate and a rotating device for clamping a disk hub by a magnetic attracting force of a magnet (Abstract). The Suzuki apparatus includes pushing pins 28 which push the disk hub when the magneto-optical disk is loaded on the rotating device so that the central aperture of the disk hub is engaged with the spindle shaft of the disk rotating device (col. 7, lines 3-31, claim 1 and Figs. 5A and 5B). However, Suzuki addresses the posture of the disk when the disk is loaded on the rotating device, rather than the warpage of the disk itself.

The Office Action specifically cites Figs. 5A and 5B as disclosing a hub which is attractable by the magnetic part to press the optical disk in such a manner that the disk plane becomes horizontal when the disk is mounted on the mounting part of the driving apparatus. Applicants respectfully submit that Figs. 5A and 5B of Suzuki do not depict, and Suzuki does not otherwise disclose, a disk plane tilting substantially with respect to a plane perpendicular to an axis of rotation of the substrate as is recited, among other features, in independent claim 58. Rather, the disk plane is always parallel to the plane perpendicular to the substrate's axis of rotation. As such, Suzuki does not disclose, or even suggest, all of the features recited in independent claim 58.

Further, with regard to independent claim 76, Applicants respectfully submit that Suzuki again fails to disclose or even suggest that the record disk has an axis of rotation at a disk plane substantially tilting with respect to a plane perpendicular to the axis of rotation.

Applicants respectfully submit that claims 66, 80 and 86 are neither disclosed nor suggested by Suzuki for at least their dependence respectively on independent claims 58 and 76, as well as for the additional subject matter which those claims recite. Claim 77 is canceled because the subject matter of that claim is incorporated into claim 76 as amended, and claim 80 is amended to depend from claim 76 instead of now canceled claim 77.

Accordingly, reconsideration and withdrawal of the rejection of claims 58, 66, 76, 80 and 86 under 35 U.S.C. §102(b) as being anticipated by Suzuki are respectfully requested.

The Office Action, in paragraph 3, rejects claims 51, 54 and 56 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,987,003 to Yokota in view of U.S. Patent No. 5,323,381 to Takahashi et al. (hereinafter "Takahashi"). This rejection is respectfully traversed.

Yokota teaches a disk substrate with an outer non-recording area, a recording area, an inner non-recording area and a central opening, with the inner non-recording area occupying an area 3 to 30% of the entire disk area including the central opening (Abstract). The Office Action states that Yokota does not show a hub provided at the center of the substrate, the hub having a diameter which is 26% or more than that of the optical disk; the optical disk satisfies the relationship of $Y \text{ over } X \geq 0.015$ (claim 51) or 0.02 (claim 56), where X is a projected area of the substrate, and Y is a contact area between the hub and the substrate, as is recited, among other features, in claims 51 and 56. Rather, the Office Action refers to Takahashi as disclosing a hub.

Takahashi teaches a disk substrate of a synthetic resin having a center hole and an information signal recording layer formed on one major surface and a magnetic plate arranged on the major surface for closing the center hole, and further, a recess for accommodating the magnetic plate with part of the rim of the recess deformed for forming lugs for holding the magnetic plate (Abstract).

In support of the conclusion that the subject matter of claims 51 and 56 would have been obvious based on the teachings of Takahashi and Yokota, the Office Action asserts that the hub disclosed in Takahashi would have been obviously applied to the substrate disclosed in Yokota. Even if this rationale is correct (which Applicants do not necessarily concede), the follow-on conclusions fail for the following reasons. The Office Action asserts that the area of the hub reaches 30% of the projected area, thus the hub would have a diameter which is more than 26% of that of the optical disk. Applicants respectfully submit that there is no suggestion that the hub disclosed in Takahashi completely fill the recess disclosed in Yokota. Although the recess disclosed in Yokota reaches as much as 30% of the overall area of the disk, there is nothing to suggest that a hub placed in that recess necessarily completely fill that recess or be greater than 26% of the area of the disk.

Further, with reference to Figs. 14-17 of Takahashi, the Office Action broadly concludes that the contact area Y between the hub and the substrate is greater than 0.05 or 0.07 times the overall area of the disk shown. Applicants respectfully submit that such a conclusion cannot be drawn from the depictions in Figs. 14-17 of Takahashi. Specifically, Figs. 14-17 of Takahashi depict, in a broken manner, the overall area of the disk, and the specification discloses no numerical relationship between the contact area between the hub and the substrate, and the overall projection area of the substrate.

For at least these reasons, Applicants respectfully submit that the combination of Yokota and Takahashi does not suggest the combination of features recited in claims 51 and

56. Further, Applicants respectfully submit that claim 54 is not suggested by the combination of the applied references at least for its dependence on independent claim 51, as well as for the separately patentable subject matter which claim 54 recites.

Accordingly, reconsideration and withdrawal of the rejection of claims 51, 54 and 56 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references is respectfully requested.

The Office Action, in paragraphs 4-7 rejects claims 52, 53, 55, 57 and 59 as being unpatentable over Yokota and Takahashi in various combinations with Suzuki, Japanese Patent No. JP 06 111518A to Abiko, and U.S. Patents Nos. 6,014,365 to Tanaka, 6,222,812 to Yoo et al. (hereinafter "Yoo"), and 6,266,298 to Tsai. These rejections are respectfully traversed.

Applicants respectfully submit that none of the additionally applied references overcomes the shortfalls in the application of Yokota and Takahashi to claim 51 as argued above, and of Suzuki to claim 58 as argued above. Applicants, therefore, respectfully submit that claims 52, 53, 55, 57 and 59 are not suggested by the combination of the applied references at least for their respective dependence on claims 51 and 58, as well as for the separately patentable subject matter which these claims recite.

Accordingly, reconsideration and withdrawal of the rejection of claims 52, 53, 55, 57 and 59 under 35 U.S.C. §103(a) as being unpatentable over the combinations of the applied references are respectfully requested.

The Office Action, in paragraph 8, rejects claims 60-62, 79 and 81-85 under 35 U.S.C. §103(a) as being unpatentable over Suzuki further in view of Takahashi. This rejection is respectfully traversed.

Applicants respectfully submit that neither Suzuki nor Takahashi respectively overcomes the shortfalls in the application of the other two independent claims 58 and 76 as

argued above. As such, the combinations of features recited in each of the enumerated claims are not suggested by the combination of the applied references.

Accordingly, reconsideration and withdrawal of the rejection of claims 60-62, 79 and 81-85 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references are respectfully requested.

The Office Action, in paragraph 9, rejects claims 64 and 65 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of Yokota and Takahashi. This rejection is respectfully traversed.

Applicants respectfully submit that for at least the reasons argued above, the combination of the features recited in claims 64 and 65, which depend from claim 58, are not suggested by the combination of the applied references.

Accordingly, reconsideration and withdrawal of the rejection of claims 64 and 65 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references are respectfully requested.

The Office Action, in paragraph 10, rejects claims 68-70, 72 and 75 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,154,411 to Sandstrom et al. (hereinafter "Sandstrom") in view of Akiyama. This rejection is respectfully traversed.

As noted above, Akiyama does not anticipate the combination of features recited in independent claim 67. Dependent claims 68-70, 72 and 75, in addition to the separately patentable features recited in each of those claims, include all of the features of independent claim 67 from which they depend. Applicants respectfully submit that Sandstrom does not overcome the shortfall in the application of Akiyama to the features recited in claim 67. As such, the combinations of the applied references does not anticipate nor suggest the combination of features varyingly recited in claims 68-70, 72 and 75.

Accordingly, reconsideration and withdrawal of the rejections of claims 68-70, 72 and 75 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references are respectfully requested.

The Office Action, in paragraph 11, rejects claims 63 and 78 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of U.S. Patent No. 6,243,326 to Sumi et al. (hereinafter "Sumi"). This rejection is respectfully traversed.

Applicants respectfully submit that Sumi does not overcome the shortfalls in the application of Suzuki to independent claims 58 and 76, as argued above. For at least their dependence respectively on independent claims 58 and 76, the combination of features recited in dependent claims 63 and 78 are therefore not suggested by the combination of the applied references.

Accordingly, reconsideration and withdrawal of the rejection of claims 63 and 78 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references are respectfully requested.

The Office Action, in paragraph 12, rejects claim 87 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of Sandstrom. This rejection is respectfully traversed.

Applicants respectfully submit that for at least the reasons enumerated above, the combination of the applied references does not suggest the combination of features recited in claims 76, 80 and 86 from which dependent claim 87 depends.

Accordingly, reconsideration and withdrawal of the rejection of claim 87 under 35 U.S.C. §103(a) as being unpatentable over the combination of the applied references are respectfully requested.

The Office Action, in paragraphs 13 and 14, rejects claims 71, 73 and 74 under 35 U.S.C. §103(a) as being unpatentable over Sandstrom in view of Akiyama, and further in view of either Abiko or Nakani. These rejections are respectfully traversed.

As a precedential matter, Applicants are unclear regarding the reference to "Nakani."

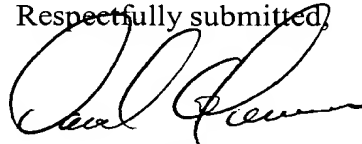
A review of the prosecution history of this application shows a previous reference to U.S. Patent No. 4,785,444 to Nakane et al. (hereinafter "Nakane"). Assuming that the reference is to Nakane rather than to Nakani, Applicants respectfully submit that neither Abiko nor Nakane overcome the shortfalls in the application of Sandstrom and Akiyama, as argued above, to independent claim 67, and the dependent claims which depend therefrom. As such, Applicants respectfully submit that the combinations of features recited in claims 71, 73 and 74 are not suggested by the combinations of the applied references.

Accordingly, reconsideration and withdrawal of the rejections of claims 71, 73 and 74 under 35 U.S.C. §103(a) as being unpatentable over the combinations of the applied references are respectfully requested.

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 51-68, 70-76, and 78-87, in addition to the allowed claims 88-94, are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,



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JAO:DAT/scg

Attachment:
Petition for Extension of Time

Date: December 20, 2004

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